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IS 1862 (1975): Studs [PGD 31: Bolts, Nuts and Fasteners Accessories]

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(Including Amendment No. 1)

IS : 1862 - 1975
(Reaffirmed 2006)

Indian Standard

SPECIFICATION FOR STUDS

(Second Revision)

Bolts, Nuts and Fasteners Accessories Sectional Committee, EDC 27 [Ref: Doc: EDC 27(2244)]

1. Scope — Covers the requirements for studs in the diameter range from 3 to 39 mm.

2. Terminology — As given in Fig. 1 and the following definitions.

2.1 *Metal End* — The end of the stud which is screwed into the component.

2.2 *Nut End* — The end of the stud which is not screwed into the component.

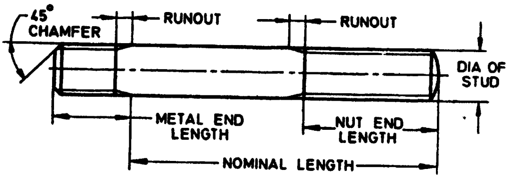


FIG. 1 NOMENCLATURE OF STUD

3. Types — Three types as follows:

Type A — recommended for use in steel.
Type B — recommended for use in cast iron.
Type C — recommended for use in alumihium alloys.

4. Grade — Precision Grade (P) and Black Grade (B) as specified in IS: 1367-1967 'Technical supply conditions for threaded fasteners (*first revision*)'.

5. Dimensions

5.1 As given in Table 1 for the size range M3 to M14.

5.2 As given in Table 2 for the size range M16 to M39.

5.3 The preferred length size combinations for Type A and Type B studs shall be as given in Table 3.

5.4 The preferred length size combinations for Type C studs shall be as given in Table 4.

5.5 The screw thread dimensions for the metal end of the stud shall conform to those specified in IS: 2186-1967 'Dimensions for external interference fit threads'.

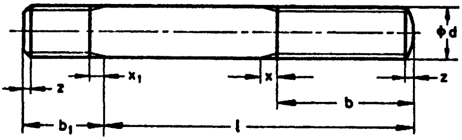
Adopted 22 January 1975	© May 1975, BIS	Gr 2

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

TABLE 1 DIMENSIONS FOR STUDS (SIZE RANGE 3 TO 14 mm)

(*Clause* 5.1)

All dimensions in millimetres.



z according to IS: 1368-1967 'Dimensions of ends of bolts and screws (*first revision*)'.
x according to IS: 1369-1975 'Dimensions of screw thread run-outs and undercuts (*first revision*)'.
*x_1 = normal ≈ 2·5P thread run-out as per IS: 1369-1975.

Nominal Size *d* h13		M3	(M3·5)	M4	(M4·5)	M5	M6	M8 M8×1	M10 M10×1·25	M12 M12×1·25	(M14) (M14×1·5)
b+2P −0	For l < 125	12	13	14	15	16	18	22	26	30	34
	125 < l < 200	—	—	—	—	—	—	—	32	36	40
b_1(js16)	Type A *Nom*	3	3·5	4	4·5	5	6	8	10	12	14
	Max	3·3	3·88	4·38	4·88	5·38	6·38	8·45	10·45	12·55	14·55
	Min	2·7	3·12	3·62	4·12	4·62	5·62	7·55	9·55	11·45	13·45
	Type B *Nom*	4·5	5	6	7	7·5	9	12	15	18	21
	Max	4·88	5·38	6·38	7·45	7·95	9·45	12·55	15·55	18·55	21·65
	Min	4·12	4·62	5·62	6·55	7·05	8·55	11·45	14·45	17·45	20·35
	Type C *Nom*	—	—	8	—	—	—	16	—	24	—
	Max	—	—	8·45	—	—	—	16·55	—	24·65	—
	Min	—	—	7·55	—	—	—	15·45	—	23·35	—

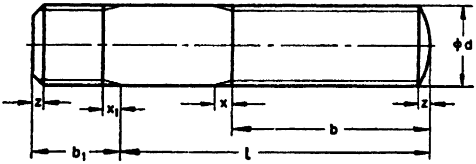
Note — Sizes shown within brackets are of second preference.

*The run-out in the metal end of the stud is to be considered only up to the last scratch of the thread and does not include any unthreaded extruded portion adjacent to the run-out.

TABLE 2 DIMENSIONS FOR STUDS (SIZE RANGE 16 TO 39 mm)

(*Clause* 5.2)

All dimensions in millimetres.



z according to IS: 1368-1967.
x according to IS: 1369-1975.
*x_1 = normal ≈ 2·5P thread run-out as per IS: 1369-1975.

Nominal Size *d*		M16 M16×1·5	(M18) (M18×1·5)	M20 M20×1·5	(M22) (M22×1·5)	M24 M24×2	(M27) (M27×2)	M30 M30×2	(M33) (M33×2)	M36 M36×3	(M39) (M39×3)
b+2P −0	For l ≤ 125	38	42	46	50	54	60	66	72	78	84
	125 < l ≤ 200	44	48	52	56	60	66	72	78	84	90
	For l > 200	57	61	65	69	73	79	85	91	[illegible]	103
b_1(js16)	Type A *Nom*	16	18	20	22	24	27	30	33	36	39
	Max	16·55	18·55	20·65	22·65	24·65	27·65	30·65	33·8	36·8	39·8
	Min	15·45	17·45	19·35	21·35	23·35	26·35	29·35	32·2	35·2	38·2
	Type B *Nom*	24	27	30	33	36	40·5	45	49·5	54	57
	Max	24·65	27·65	30·65	33·8	36·8	41·3	45·8	50·3	54·95	57·95
	Min	23·35	26·35	29·35	32·2	35·2	39·7	44·2	48·7	53·05	56·05
	Type C *Nom*	32	—	40	—	—	—	—	—	—	—
	Max	32·8	—	40·8	—	—	—	—	—	—	—
	Min	31·2	—	39·2	—	—	—	—	—	—	—

Note — Sizes shown within brackets are of second preference.

*The run-out in the metal end of the stud is to be considered only up to the last scratch of the thread and does not include any unthreaded extruded portion adjacent to the run-out.

AMENDMENT NO. 1 MARCH 1981
TO
IS : 1862 - 1975 SPECIFICATION FOR STUDS
(Second Revision)

Alterations

(*Page* 1, *clause* 3) — Substitute the following for the existing clause:

'**3. Types** — Three types as follows:

Type A — $b_1 \approx 1\,d$, suitable for use in steel.
Type B — $b_1 \approx 1{\cdot}5\,d$, suitable for use in cast iron.
Type C — $b_1 \approx 2\,d$, suitable for use in aluminium alloys.

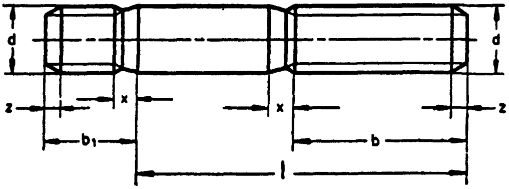
Note — For values of b_1, *see* Tables 1 and 2.'

(*Page* 1, *clause* 4) — Substitute the following for the existing clause:

"**4. Grade** — Grade A as specified in IS: 1367 (Part II)-1979 'Technical supply conditions for threaded steel fasteners: Part II Product grades and tolerances (*second revision*)'.

(*Page* 2, *Table* 1):

a) *Figure* — Substitute the following for the existing figure:



z according to IS : 1368-1967 'Dimensions of ends of bolts and screws (*first revision*)'.
x according to IS : 1369-1975 'Dimensions of screw thread runouts and undercuts (*first revision*)'.

Note — Machined threads and rounded end at nut end also permitted.

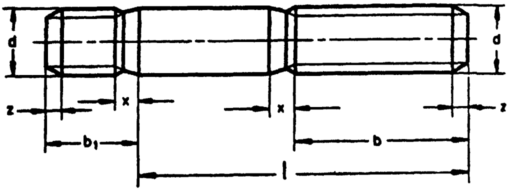
b) *Tenth Column, last three entries* — Substitute the following for the existing entries:

20
20·65
19·35

c) *Foot-note with '*' mark* — Delete.

(*Page* 2, *Table* 2):

a) *Figure* — Substitute the following for the existing figure:



z according to IS : 1368-1967 'Dimensions of ends of bolts and screws (*first revision*)'.
x according to IS : 1369-1975 'Dimensions of screw thread run-outs and undercuts (*first revision*)'.

Note — Machined threads and rounded end at nut end also permitted.

b) *Foot-note with '*' mark* — Delete.

(*Page* 3, *Table* 4) — Substitute the following for the existing table:

TABLE 4 PREFERRED LENGTH-SIZE COMBINATIONS FOR TYPE C STUDS

(*Clause* 5.4)

All dimensions in millimetres.

l	M4	M8 M8x1	M10 M10x1.25	M12 M12x1.25	M16 M16x1.5	M20 M20x1.5
25						
30						
40						
60						
80						
100						
120						
140						
160						
200						

Note 1 — Preferred lengths are between the stepped bold lines.

Note 2 — *See* Fig. 2 and 3 for tolerances on length *l*.

Addenda

(*Page* 1, *clause* 5.5) — Add the following new sentence at the end of the clause:

"Screw threads for nut end of the stud shall conform to 6 g tolerance class as specified in IS : 4218-1976 ' ISO metric screw threads '."

(*Page* 3, *Table* 3, *Note* 3) — Add the following new Note after Note 3:

Note 4 — For studs above the stepped bold line, thread length, $b \approx l - (x + 3)$.'

(EDC 27)

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TABLE 3 PREFERRED LENGTH-SIZE COMBINATIONS FOR TYPE A AND TYPE B STUDS

(*Clause* 5.3)

All dimensions in millimetres.

l	M3	(M3·5)	M4	(M4·5)	M5	M6	M8 M8x1	M10 M10x1·25	M12 M12x1·25	(M14) (M14x1·5)	M16 M16x1·5	(M18) (M18x1·5)	M20 M20x1·5	(M22) (M22x1·5)	M24 M24x2	(M27) (M27x2)	M30 M30x2	(M33) (M33x2)	M36 M36x3	(M39) (M39x3)
14																				
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200																				
225																				
250																				
275																				
300																				

Note 1 — Sizes shown within brackets are of second preference.
Note 2 — Preferred lengths are between the stepped bold lines.
Note 3 — *See* Fig. 2 and 3 for tolerances on length *l*.

TABLE 4 PREFERRED LENGTH-SIZE COMBINATIONS FOR TYPE C STUDS

(*Clause* 5.4)

All dimensions in millimetres.

l	M4	M8 M8×1	M12 M12×1.25	M16 M16×1.5	M20 M20×1.5
25					
30					
40					
60					
80					
100					
120					
140					
160					
200					

Note 1 — Preferred lengths are between the stepped bold lines.
Note 2 — *See* Fig. 2 and 3 for tolerances on length *l*.

6. Tolerances — As given in Fig. 2 and Fig. 3.

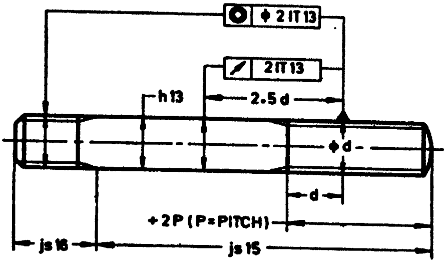

FIG. 2 TOLERANCES FOR PRECISION GRADE STUDS

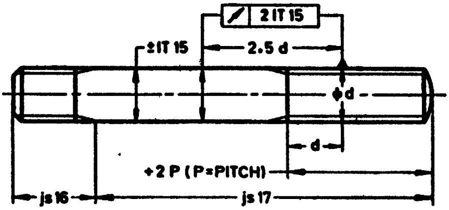

FIG. 3 TOLERANCES FOR BLACK GRADE STUDS

7. Mechanical Properties

7.1 Type A and Type B studs, made from steel, shall conform to property classes 4.6, 6.6, 8.8 and 10.9 of IS: 1367-1967 'Technical supply conditions for threaded fasteners (*first revision*)'.

7.2 Type C studs, made from steel, shall conform to property classes 4.6, 6.6 and 8.8 of IS: 1367-1967.

8. General Requirements — In regard to requirements not covered in this standard, the studs shall comply with the requirements of IS: 1367-1967.

9. Sampling — The sampling and criteria of acceptance shall be in accordance with IS: 2614-1969 'Methods for sampling of fasteners (*first revision*)'.

10. Designation — Shall be designated by the name, type, size, nominal length, number of this standard, grade and symbol for mechanical property class.

Example:

A stud of Type A, size M5, nominal length 25 mm, precision grade and mechanical property class 8.8 shall be designated as:

Stud A M5 × 25 IS: 1862 — P-8·8

11. *Certification Marking* — Details available with the Bureau of Indian Standards.

EXPLANATORY NOTE

This standard was originally published in 1961, covering two types of studs in the precision grade. In the first revision two grades of studs, namely, precision and black together with two Types A and B in each grade were included. In the present revision, the following changes have been made:

a) Type C studs for use with aluminium alloys have been included.

b) Tolerances for studs have been specified.

c) Length values as given in IS: 4206-1967 'Dimensions for nominal lengths and thread lengths for bolts, screws and studs' have been incorporated.

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